

INFORMATION SHEET

R5-2009-XXXX
FOSTER POULTRY FARMS
LIVINGSTON CHICKEN PROCESSING COMPLEX
WASTEWATER TREATMENT PLANT
MERCED COUNTY

Background

Foster Poultry Farms a California based corporation (hereafter Foster Farms or Discharger) operates a chicken processing complex (Complex) at 843 Davis Street in the City of Livingston, Merced County. Wastewater from the Complex is currently discharged to the City of Livingston's Industrial Wastewater Treatment Facility (Facility), which provides wastewater collection and treatment exclusively for Foster Farms.

The existing Facility consists of 12 unlined ponds with limited aeration, encompassing approximately 83 acres adjacent to the Merced River and is currently regulated by Waste Discharge Requirements (WDRs) Order No. 79-209. The WDRs limit wastewater discharge to 3.5 million gallons per day (mgd). Wastewater Reclamation Requirements (WRRs) Order No. 93-091 regulates the discharge of up to 2.4 mgd of effluent to 223 acres of adjacent lands (Reclamation Area) owned by Foster Farms.

On 26 October 2006, the Central Valley Water Board adopted Cease and Desist Order (CDO) No. R5-2006-0112 for violations of WDRs Order No. 79-209, including groundwater pollution, flow limit exceedances, and freeboard encroachment. The CDO, issued to the City of Livingston, includes tasks and a compliance schedule for construction of an upgraded Facility to be complete by 15 January 2009. However, disagreements between the City of Livingston and Foster Farms over financing and treatment technology delayed the construction. A Settlement Agreement, dated 16 November 2007, ended the litigation and established that Foster Farms would assume responsibility for construction of a new wastewater treatment plant (WWTP) on its own land. Under the agreement, the City of Livingston will continue to operate its existing Facility until the Foster Farms WWTP is complete. Upon completion and initiation of operations of the new WWTP, Foster Farms has agreed to remediate the existing site as directed by the Central Valley Water Board, including removal of accumulated sludge from the existing ponds.

Foster Farms submitted a Report of Waste Discharge (RWD) dated 31 January 2008, for its new WWTP. The new WWTP will consist of a series of aerobic and anaerobic tanks as part of a biological nitrogen removal (BNR) treatment system to reduce high nutrient concentrations in the wastewater. The WWTP, expected to be operational by the end of 2010, will be a significant improvement over the existing Livingston Facility. Treated wastewater will be disposed of via a combination of percolation and recycling. Wastewater from the new WWTP will be applied to approximately 223 acres in the current Reclamation Area, which will be cropped with corn and oats during the summer. During wet weather, treated effluent will be stored in a 35 million gallon unlined storage reservoir.

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Solids Disposal

Wasted sludge from the treatment process will be stored in a 6-million gallon double-lined lagoon with a leachate collection system. Clarified liquid will be decanted and returned to the inlet of the treatment system. After drying and pressing to approximately 25% solids, the sludge will be hauled off for land application as a soil amendment or for composting at Foster Farms' Manure Storage Facility about five miles south of Livingston.

Groundwater Conditions

Regional groundwater underlying the area is first encountered at about 50 feet below ground surface (bgs) and flows south-westward according to information in Lines of Equal Elevation of Water in Wells in Unconfined Aquifer, published by Department of Water Resources (DWR) in Spring 2004. According to groundwater data from existing monitoring wells in the Reclamation Area there is a groundwater mound approximately four feet high centered near monitoring well MW-4R with the groundwater gradient directed radially outward from this point.

Proximity to the Merced River makes groundwater in the vicinity of the Reclamation Area of high quality. Previous WDRs and groundwater data from DWR wells in proximity to the site indicates water quality of first-encountered groundwater is good to excellent with an EC less than 500 $\mu\text{mhos/cm}$.

Data from monitoring wells in the vicinity of the Reclamation Area and the Livingston Facility indicates that first-encountered groundwater has been significantly affected by the existing discharge. The monitoring well network shows a clear trend of increasing TDS, nitrate, chloride, and other waste constituents in some groundwater monitoring wells.

In 2007, groundwater beneath the Reclamation Area contained EC and TDS concentrations ranging from 813 to 1,427 $\mu\text{mhos/cm}$ and 613 to 950 mg/L, respectively. The lowest concentrations were in monitoring wells MW-1R and MW-10R, south and east of the Reclamation Area and furthest from the groundwater mound and the existing ponds at the Livingston Facility.

The new WWTP will be a significant improvement over the existing unlined pond system and is expected to improve groundwater quality over time. Investigation and cleanup of impacts from previous discharges will be addressed by a separate Cleanup and Abatement Order.

Basin Plan, Beneficial Uses, and Regulatory Considerations

The *Water Quality Control Plan for the Sacramento and San Joaquin River Basins, Fourth Edition* (revised October 2007) (Basin Plan) designates beneficial uses, establishes numerical and narrative water quality objectives, contains implementation plans and policies for protecting all waters of the basin, and incorporates by reference plans and policies of the State Water Board.

One of the greatest long-term problems facing California's groundwater is increasing salinity. The Tulare Lake Basin Plan's salt management requirements have been successfully implemented for several decades. Widespread and long-term compliance with these requirements justify them as appropriate best practicable control measures for salinity applicable to discharges in the Sacramento and San Joaquin River Basins. The Central Valley Water Board encourages proactive management of waste streams by dischargers to control addition of salt through use, and has established an incremental electrical conductivity (EC) limitation of 500 $\mu\text{mhos/cm}$ as the measure of the maximum permissible addition of salt constituents through use or a maximum of 1,000 $\mu\text{mhos/cm}$ for industrial discharges to good quality groundwater. A more restrictive limitation on salt constituents added through use is appropriate where necessary to assure compliance with a groundwater limitation for any constituent established by the Central Valley Water Board.

The Basin Plan states that when compliance with a narrative objective is required to protect specific beneficial uses, the Central Valley Water Board will, on a case-by-case basis, adopt numerical limitations in order to implement the narrative objective. With good to excellent quality groundwater and Class I and Class IIw-2 soils (e.g., Hanford fine sandy loam and Grangeville loam) the area is suitable for most crop types including sensitive or moderately salt sensitive crops such as strawberries, melons, or stone fruit.

From the above information regarding soil conditions and crop types, the most appropriate groundwater limit for EC to implement the Basin Plan narrative water quality objective to protect agricultural beneficial uses would be 700 $\mu\text{mhos/cm}$. However, based on existing conditions, groundwater beneath the Reclamation Area will not be able to immediately meet with this limit. Further, Foster Farms has questioned whether ambient water quality for the site is as low as 700 $\mu\text{mhos/cm}$ as a result of historical agricultural practices in and around the Reclamation Area.

While the area is suitable for most crop types including salt-sensitive crops, almonds and sweet potatoes, which tolerate irrigation water with an EC up to 1,000 $\mu\text{mhos/cm}$ with no reduction in yield, appear to be the most prevalent salt-sensitive crops grown in the area. Therefore, considering guidelines from reference documents such as Ayers and Wescott's *Water Quality for Agriculture* and the *Western Fertilizer Handbook* as well as information regarding site-specific soil types, irrigation methods, and crops (predominantly almonds and sweet potatoes), setting a limit on EC up to 1,200 $\mu\text{mhos/cm}$, which would correspond to less than a 10% decrease in yield for these crops and would reflect current groundwater conditions, would be an appropriate interim groundwater limit to be protective of agricultural uses. In addition, an EC of 1,200 $\mu\text{mhos/cm}$ is within the recommended and upper range established as secondary MCL's for drinking water.

Antidegradation

The antidegradation directives of State Water Board Resolution No. 68-16, "Statement of Policy With Respect to Maintaining High Quality Waters in California," or "Antidegradation Policy" require that waters of the State that are better in quality than established water quality

objectives be maintained "consistent with the maximum benefit to the people of the State." Waters can be of high quality for some constituents or beneficial uses and not others. Policy and procedures for complying with this directive are set forth in the Basin Plan.

Constituents of concern that have the potential to degrade groundwater include, in part, organics, nutrients, and salts. However, the discharge will likely not affect the beneficial uses of groundwater because:

- a. For BOD, the discharge will be treated to better than secondary standards and the instantaneous and cycle average loading rates to the Reclamation Area are below the USEPA recommended rate of 100 lbs/acre/day according to publication No. 625/3-77-007, *Pollution Abatement in the Fruit and Vegetable Industry*. No degradation due to organic loading is expected to occur.
- b. For nitrogen, the WWTP is expected to reduce effluent nitrogen concentrations to below 10 mg/L, which is below the drinking water MCL for nitrates. This should be considered BPTC for nitrogen and should preclude further degradation of groundwater for nitrates. Groundwater downgradient of the discharge should eventually be able to meet final groundwater limits that are consistent with all beneficial uses.
- c. For salinity, the average EC and TDS concentration of the discharge are 989 μ mhos/cm and 670 mg/L, respectively. A recent study conducted by Condor Earth Technologies, Inc. (Condor) shows that organic compounds contribute approximately 30% to the TDS of the discharge. As discussed in the Central Valley Water Board's 2007 *Management Guidance for Salinity in Waste Discharge Requirements*, organic TDS should be considered separate from mineralized TDS (i.e., sodium, chloride, etc.) since sources, treatment, and environmental impacts are very different.

Foster Farms proposes to implement a Salinity Control Plan in order to control and reduce the salinity of the discharge to the extent feasible. The proposed Order would set an FDS limit of 550 mg/L (based on the Condor salinity evaluation), which equates to an EC between 850 and 925 μ mhos/cm, which is less than the technology-based EC limit of 1,000 μ mhos/cm accepted as BPTC for industrial discharges that discharge to land with good quality groundwater.

The salinity of the discharge will be greater than 500 μ mhos/cm (considered ambient background water quality), and therefore could potentially degrade water quality. However, the degradation will be less than what has occurred in the past and groundwater downgradient of the discharge should eventually be able to meet final groundwater limits that are consistent with all beneficial uses.

Economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and therefore sufficient reason exists to accommodate growth and groundwater degradation, provided that the terms of the Basin Plan are met. Degradation of

groundwater quality by some of the typical waste constituents released with discharge from a food processing facility after effective source reduction, treatment and control, and considering the best efforts of the Discharger and magnitude of degradation, is of maximum benefit to the people of the State. Foster Farms aids in the economic prosperity of the region by direct employment of approximately 3,500 people. In addition, it provides incomes and support for valley poultry farms and associated trucking firms, and provides a tax base for local and county governments.

The reduction in the discharge of nitrogen resulting from the project, and the implementation of a Salinity Control Plan to control and reduce salts to the extent feasible (required as a Provision of the proposed Order) are consistent with BPTC and for the maximum benefit of the people of the State, in accordance with the Antidegradation Policy.

Title 27

Title 27, CCR, section 20005 et seq. (Title 27) contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for full containment of classified waste, requires extensive monitoring of groundwater and the unsaturated zone for any indication of failure of containment, and specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent in a classified waste is acceptable under Title 27 regulations.

Title 27 Section 20090(b) exempts discharges of designated waste to land from Title 27 containment standards provided the Regional Water Board has issued waste discharge requirements or waived such issuance; the discharge is in compliance with the Basin Plan; and the waste need not be managed according to Title 22, CCR, Division 4.5, Chapter 11, as a hazardous waste.

Accordingly, the discharge of effluent and the operation of treatment or storage facilities associated with a food processing facility can be allowed without requiring compliance with Title 27, provided any resulting degradation of groundwater is in accordance with the Basin Plan. With treatment to remove organics and reduce nitrogen to less than water quality objectives (i.e., < 10 mg/L), and with an EC of less than 1,000 $\mu\text{mhos/cm}$, the discharge authorized by this Order is in accordance with the Basin Plan and the Antidegradation Policy and is therefore exempt from Title 27.

CEQA

On 3 March 2009, the City of Livingston adopted a Mitigated Negative Declaration for the construction and operation of a new industrial wastewater treatment plant for the Foster Farms chicken-processing complex in Livingston.

The Mitigated Negative Declaration determined that the project would have a less than significant impact on water quality since the project, as proposed would reduce or maintain concentrations of constituents in the wastewater discharge. Specifically nitrogen

concentrations in the discharge will be reduced to < 10 mg/L, which is a significant improvement from the existing discharge and is expected to improve groundwater quality beneath the Reclamation Area.

The Central Valley Water Board reviewed and concurs with the conclusions in the Mitigated Negative Declaration that the project would be an improvement over the existing discharge. Although the Mitigated Negative Declaration did not include any specific mitigation measures to protect water quality, the proposed Order would include the following measures to mitigate any adverse impacts to water quality:

- a) Sets effluent limits for BOD, TSS, total nitrogen, chloride, and FDS;
- b) Establishes interim groundwater limits;
- c) Establishes a monitoring and reporting program; and
- d) Requires the Discharger to prepare and implement a Salinity Control Plan, a groundwater study, and a cropping plan.

Proposed Order Terms and Conditions

Discharge Prohibitions, Effluent Limitations, Discharge Specifications, and Provisions

The proposed Order prohibits discharge to surface waters and water drainage courses.

The proposed Order would set an annual average flow limit at 3.77 mgd with a maximum daily flow limit of 5.0 mgd. The Discharger intends to rely on a combination of percolation and recycling on crops. Field capacity testing indicates that soils are predominantly fine grained sands with high permeability. This should be sufficient provided the Discharger meets all other effluent limitations and specifications (i.e. BOD₅ and TSS of 40 mg/L monthly average and 80 mg/L daily maximum, and monthly average limits for TN and chloride of < 10 mg/L and 175 mg/L, respectively).

The proposed Order would set an interim annual average effluent limit for FDS of 550 mg/L. A recent salinity evaluation of the discharge from the DAF pre-treatment system shows that approximately 30% of the discharge TDS is contributed by organics, so an effluent limitation based on FDS would be more appropriate. Based on this evaluation, it is anticipated that a discharge limit for FDS of 550 mg/L, would equate to an EC between 850 and 925 $\mu\text{mhos/cm}$.

The proposed Order would prescribe interim groundwater limits based on numeric interpretations of the Basin Plan's water quality objectives for agriculture and sets specific limits for EC, nitrates, and total coliform organisms, which would be protective of beneficial uses based on site specific crops and soil type in the immediate vicinity of the site. The limitations require that the discharge not cause or contribute to exceedances of these objectives or natural background water quality, whichever is greatest. In addition, this Order includes a provision requiring the Discharger to submit a groundwater study, to characterize naturally occurring groundwater quality in the immediate area.

The proposed Order includes provisions requiring the Discharger to submit a comprehensive Salinity Control Plan. The Salinity Control Plan would include salinity source reduction goals and a time schedule to meet the goals (prior to completion of the new WWTP), and identify any additional methods that could be used to further reduce the salinity of the discharge to the maximum extent feasible.

Monitoring Requirements

Section 13267 of the CWC authorizes the Central Valley Water Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the state. In recent years there has been increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Section 13268 of the CWC authorizes assessment of civil administrative liability where appropriate.

The proposed Order includes effluent monitoring requirements, supply water monitoring, and Recycling monitoring requirements including groundwater monitoring in the Reclamation Area. In order to adequately characterize wastewater, the Discharger is required to monitor for pH, EC, biochemical oxygen demand, total dissolved solids, inorganic dissolved solids, total nitrogen, and other constituents.

The Discharger must monitor groundwater for waste constituents expected to be present in the discharge, and capable of reaching groundwater, and violating groundwater limitations if its treatment, control, and environmental attenuation, proves inadequate. For each constituent listed in [Section F, Interim Groundwater Limitations](#), of the WDR, the Discharger must, as part of each monitoring event, compare concentrations of constituents found in each monitoring well (or similar type of groundwater monitoring device) to the background concentration or to prescribed numerical limitations to determine compliance.

Reopener

The conditions of discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. It may be appropriate to reopen the Order if applicable laws and regulations change.

KC/DKP: 6/2/09